

AMENDMENTS TO THE CLAIMS

1. (currently amended) A neutron detection device comprising:

an active semiconductor layer including a plurality of charge-sensitive cells;

~~and~~

a first neutron conversion layer capable of converting neutrons into charged particles, wherein said neutron conversion layer is located in close proximity to the active semiconductor layer; ~~cells and~~

a second neutron conversion layer formed in proximity to the active semiconductor layer.
2. (currently amended) A neutron detection device as claimed in claim 1, further comprising an insulating layer located between the active semiconductor layer and the neutron conversion layer.
3. (currently amended) A neutron detection device as claimed in claim 1, further comprising a barrier layer located between the neutron conversion layer and the active semiconductor layers.
4. (original) A neutron detection device as claimed in claim 3, wherein the barrier layer comprises silicon nitride.
5. (original) A neutron detection device as claimed in claim 1, wherein the neutron conversion layer comprises boron.
6. (previously amended) A neutron detection device as claimed in claim 1, wherein the neutron conversion layer comprises boron-containing glass.

7. (previously amended) A neutron detection device as claimed in claim 6, wherein the boron-containing glass includes 5% boron.
8. (original) A neutron detection device as claimed in claim 1, wherein the neutron conversion layer includes lithium.
9. (cancelled) A neutron detection device as claimed in claim 1, further comprising a second neutron conversion layer formed in proximity to the active semiconductor layer.
10. (currently amended) A neutron detection device as claimed in claim 1, wherein one of the neutron conversion layers comprises boron and the other of the neutron conversion layers comprises lithium.
11. (original) A method of manufacturing a neutron detector from a memory device, wherein the memory device includes an active semiconductor layer, a base substrate and an insulating layer between the active semiconductor layer and the base substrate, the method comprising:

removing the base substrate layer from a memory device to expose the insulating layer; and

forming a neutron conversion layer on the insulating layer.

12. (original) A method of manufacturing a neutron detector from a memory device as claimed in claim 11, further comprising forming a barrier layer on the insulating layer prior to forming the neutron conversion layer.

13. (original) A method of manufacturing a neutron detector from a memory device as claimed in claim 11, further comprising forming a second neutron conversion layer on the neutron conversion layer.
14. (original) A method of manufacturing a neutron detector from a memory device as claimed in claim 11, wherein the neutron conversion layer comprises boron.
15. (original) A method of manufacturing a neutron detector from a memory device as claimed in claim 13, wherein the neutron conversion layer formed on the insulating layer comprises boron and the second neutron conversion layer comprises lithium.
16. (original) A method of manufacturing a neutron detector from a memory device, wherein the memory device includes an active semiconductor layer, a base substrate and an insulating layer between the active semiconductor layer and the base substrate, the method comprising:

removing the base substrate layer and the insulating layer from the memory device; and

forming a neutron conversion layer on the active semiconductor layer.

17. (original) A method of manufacturing a neutron detector from a memory device as claimed in claim 16, further comprising forming a barrier layer on the active semiconductor layer prior to forming the neutron conversion layer.
18. (original) A method of manufacturing a neutron detector from a memory device as claimed in claim 16, further comprising

forming a second neutron conversion layer on the neutron conversion layer formed on the active semiconductor layer.

19. (original) A method of manufacturing a neutron detector from a memory device as claimed in claim 16, wherein the neutron conversion layer comprises boron.
20. (original) A method of manufacturing a neutron detector from a memory device as claimed in claim 18, wherein the neutron conversion layer formed on the insulating layer comprises boron and the second insulating layer comprises lithium.
21. (previously presented) A neutron detection device comprising:

an active semiconductor layer including a plurality of charge-sensitive cells;

and

a neutron conversion layer located under the active semiconductor layer.
22. (previously presented) A neutron detection device as claimed in claim 21, further comprising an insulating layer located between the active semiconductor layer and the neutron conversion layer.
23. (previously presented) A neutron detection device as claimed in claim 21, further comprising a barrier layer located between the neutron conversion layer and the active semiconductor layer.
24. (previously presented) A neutron detection device as claimed in claim 23, wherein the barrier layer comprises silicon nitride.
25. (previously presented) A neutron detection device as claimed in claim 21, wherein the neutron conversion layer comprises boron.

26. (previously presented) A neutron detection device as claimed in claim 21, wherein the neutron conversion layer comprises boron-containing glass.
27. (previously presented) A neutron detection device as claimed in claim 26, wherein the boron-containing glass includes 5% boron.
28. (previously presented) A neutron detection device as claimed in claim 21, wherein the neutron conversion layer includes lithium.
29. (previously presented) A neutron detection device as claimed in claim 21, further comprising a second neutron conversion layer formed in proximity to the active semiconductor layer.
30. (previously presented) A neutron detection device as claimed in claim 29, wherein one of the neutron conversion layers comprises boron and the other of the neutron conversion layers comprises lithium.
31. (currently amended) A neutron detection device comprising:
an active semiconductor layer including a plurality of charge-sensitive cells;
and
a first neutron conversion layer adjacent to the active semiconductor layer;
and
a second neutron conversion layer formed in close proximity to the active semiconductor layer.
32. (currently amended) A neutron detection device ~~as claimed in claim 31~~, further comprising an active semiconductor layer including a plurality of charge-sensitive cells; ~~and~~

a first neutron conversion layer;

a second neutron conversion layer; and

an insulating layer located between the active semiconductor layer and the neutron conversion layers.

33. (currently amended) A neutron detection device ~~as claimed in claim 31, further comprising~~ an active semiconductor layer including a plurality of charge-sensitive cells;

a first neutron conversion layer;

a second neutron conversion layer; and

a barrier layer located between the neutron conversion layer and the active semiconductor layers.

34. (previously presented) A neutron detection device as claimed in claim 33, wherein the barrier layer comprises silicon nitride.
35. (Previously presented) A neutron detection device as claimed in claim 31, wherein the neutron conversion layer comprises boron.
36. (Previously presented) A neutron detection device as claimed in claim 31, wherein the neutron conversion layer comprises boron-containing glass.
37. (Previously presented) A neutron detection device as claimed in claim 36, wherein the boron-containing glass includes 5% boron.
38. (Previously presented) A neutron detection device as claimed in claim 31, wherein the neutron conversion layer includes lithium.

39. (cancelled) A neutron detection device as claimed in claim 31, further comprising a second neutron conversion layer formed in proximity to the active semiconductor layer.
40. (currently amended) A neutron detection device as claimed in claim 31 ~~39~~, wherein one of the neutron conversion layers comprises boron and the other of the neutron conversion layers comprises lithium.
41. (currently amended) A neutron detection device comprising:
an active semiconductor layer including a plurality of charge-sensitive cells;
~~and~~
a first neutron conversion layer in contact with the active semiconductor layer; ~~and~~
a second neutron conversion layer formed in proximity to the active semiconductor layer.
42. (canceled) A neutron detection device as claimed in claim 41, further comprising an insulating layer located between the active semiconductor layer and the neutron conversion layers.
43. (canceled) A neutron detection device as claimed in claim 41, further comprising a barrier layer located between the neutron conversion layer and the active semiconductor layers.
44. (canceled) A neutron detection device as claimed in claim 43, wherein the barrier layer comprises silicon nitride.
45. (Previously presented) A neutron detection device as claimed in claim 41, wherein the neutron conversion layer comprises boron.

46. (Previously presented) A neutron detection device as claimed in claim 41, wherein the neutron conversion layer comprises boron-containing glass.
47. (Previously presented) A neutron detection device as claimed in claim 46, wherein the boron-containing glass includes 5% boron.
48. (previously presented) A neutron detection device as claimed in claim 41, wherein the neutron conversion layer includes lithium.
49. (canceled) A neutron detection device as claimed in claim 41, further comprising a second neutron conversion layer formed in proximity to the active semiconductor layer.
50. (currently amended) A neutron detection device as claimed in claim 41 ~~49~~, wherein one of the neutron conversion layers comprises boron and the other of the neutron conversion layers comprises lithium.
51. (Previously presented) A neutron detection device comprising:

an active semiconductor layer including a plurality of charge-sensitive cells;

and

a neutron conversion layer located within a distance from the active semiconductor layer no greater than the range of neutron reactant product particles traversing the distance.
52. (Previously presented) A neutron detection device as claimed in claim 51, further comprising an insulating layer located between the active semiconductor layer and the neutron conversion layer.

53. (Previously presented) A neutron detection device as claimed in claim 51, further comprising a barrier layer located between the neutron conversion layer and the active semiconductor layer.
54. (Previously presented) A neutron detection device as claimed in claim 53, wherein the barrier layer comprises silicon nitride.
55. (Previously presented) A neutron detection device as claimed in claim 51, wherein the neutron conversion layer comprises boron.
56. (Previously presented) A neutron detection device as claimed in claim 51, wherein the neutron conversion layer comprises boron-containing glass.
57. (Previously presented) A neutron detection device as claimed in claim 56, wherein the boron-containing glass includes 5% boron.
58. (Previously presented) A neutron detection device as claimed in claim 51, wherein the neutron conversion layer includes lithium.
59. (Previously presented) A neutron detection device as claimed in claim 51, further comprising a second neutron conversion layer formed in proximity to the active semiconductor layer.
60. (Previously presented) A neutron detection device as claimed in claim 59, wherein one of the neutron conversion layers comprises boron and the other of the neutron conversion layers comprises lithium.